## REMARKS/ARGUMENTS

Claim 3 has been amended by this Response to correct a typographical error. Claims 7 and 14 have been previously cancelled. Claims 1-6, 8-13 and 15-18 are currently pending in this application, and are at issue herein.

### Amendments to the Specification

In reviewing the specification, Applicants uncovered a few typographical errors in the paragraph beginning on page 9, line 10. Applicants have amended the specification to correct these errors, as requested in the Office Action.

### Allowed/Allowable Subject Matter

Claims 3-6 and 10-11 have been allowed. Claims 16 and 18 have been objected to as being dependent upon a rejected base claim, but the Office Action indicates that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank the Examiner for these notifications. However, based on at least the arguments submitted below, Applicants believe claims 1-6, 8-13 and 15-18 are allowable in their present form and have therefore elected not to rewrite the objected to claims in independent form at this time.

### § 102 Claim Rejections

Claims 1-2, 8-9, 13, 15 and 17 stand rejected under § 102(e) as anticipated by U.S. Publication No. 2004/0015697 to de Queiroz ("de Queiroz"). Applicants respectfully traverse the claim rejections for at least the following reasons.

## Claims 1-2, 8-9 and 13

The Office Action cites Fig. 3 and paragraphs 0038-0039 of de Queiroz as disclosing that side information corresponding to a plurality of layers and a plurality of encoded quantization samples are packaged together into a hierarchical structure. However, Applicants respectfully submit that the Office Action has misapplied this teaching of de Queiroz to the pending claims.

The only mention of the term "hierarchical" in paragraphs 0038-0039 of de Queiroz is with respect to Fig. 2. In fact, the only use of the term "hierarchical" in de Queiroz is with respect to Fig. 2; being used once in paragraph 0038 and once in paragraph 0029 in the brief description of Fig. 2. However, Fig. 2 has nothing to do with side information, layers, encoded quantization samples, encoded bits or bit planes, but is rather simply a diagram of the sub-bands obtained via hierarchical sub-band decomposition of an image. (de Queiroz, paragraph 0029). In short, Fig. 2 represents the data that is to be encoded.

Paragraph 0038 of de Queiroz discusses Fig. 2 as follows:

> A typical representation of the wavelet coefficients of a JPEG/WT encoded image generally follows the scheme in FIG. 2 (which should be recognizable by one skilled in the art of JPEG compression techniques as a diagram of the sub-bands obtained via hierarchical sub-band decomposition of said image). The transformed and quantized data can then be encoded into a binary stream via an entropy encoder 130. (de Queiroz, paragraph 0038, lines 32-39).

Fig. 3 of de Queiroz illustrates the bit planes, or bit slices, from a row of coefficients 220 of a given sub-band of Fig. 2. In paragraph 0039, which discusses encoding of the bit planes, there is no disclosure or suggestion of packaging side information corresponding to a plurality of layers and a plurality of encoded

quantization samples into a hierarchical structure. There is no disclosure or suggestion of side information at all in paragraphs 0038-0039. Paragraph 0039 of de Queiroz simply discloses that the bit planes, or bit slices, are typically encoded sequentially, from the most significant bits to the least significant bits. Paragraphs 0038-0039, as well as de Queiroz in general, are devoid of any disclosure or suggestion of packaging side information corresponding to a plurality of layers and a plurality of encoded quantization samples into a hierarchical structure, as recited in independent claims 1 and 8.

The Office Action appears to equate Fig. 3 and the paragraph 0039 discussion with packaging into hierarchical structure side information corresponding to a plurality of layers and a plurality of encoded quantization samples. However, all Fig. 3 of de Queiroz illustrates is mapping of the data to be encoded into bit planes. This is not the side information recited in the claims. There is no disclosure or suggestion in de Queiroz of packaging any side information into a hierarchical structure. The hierarchical packaging of side information in described and illustrated in the present application in Figs. 9 and 10 and the corresponding description of those figures founds on pages 12-13 of the specification. There is no disclosure or suggestion in de Queiroz of such a hierarchical structure.

Accordingly, for at least the above-identified reasons, independent claims 1 and 8 are believed allowable over the prior art.

Dependent claims 2, 9 and 13 depend cognately from either independent claims 1 or 8, and add features which further remove the present invention from the prior art. Given at least the distinctions identified above, the dependent claims are

believed allowable over the prior art and a separate discussion of the dependent claims will not be belabored for the sake of brevity.

## Claims 15 and 17

With regard to independent claims 15 and 17, the Office Action alleges that de Queiroz discloses a method of decoding digital data, with the method comprising analyzing a bitstream to obtain at least one encoded bit-sliced data corresponding to a predetermined bit plane and side information encoded (at Fig. 8) according to a transformed bit-sliced encoding method (at Fig. 3) decoding bit-sliced data corresponding to the predetermined bit plane with reference to the bit-sliced data and the side information (at paragraph 0044) and bit-combining the decoded bit-sliced data to obtain samples constituting the digital data (at paragraphs 0045 and 0049). Applicants respectfully submit that the Office Action has misapplied de Queiroz to these claims.

As previously noted, de Queiroz neither discloses nor suggests encoding any type of side information. It follows then that de Queiroz is also devoid of any disclosure or suggestion of decoding any type of side information.

Fig. 8 of de Queiroz is a block diagram illustrating how signature computation (hashing and encryption) is performed on a section at a time. (de Queiroz, paragraph 0035). The method illustrated in Fig. 8 is concerned with authenticating the received data. A first section of data is decoded to recover quantized coefficients, and the quantized coefficients are used to derive a hashing function to produce a number P'. A next section of data is decoded to remove an embedded signature string, when is decrypted to obtain a number P" embedded therein associated with the previous section of data. If P" matches P', the section is

authenticated. If a match cannot be verified, then the associated section cannot be authenticated. The method of Fig. 8 continues for each section of data until all the sections have been processed. (de Queiroz, paragraph 0043).

Paragraph 0044 of de Queiroz discloses authenticating the last section of data by using a hashing function number which is self embedded. The hashing function is computed from all of the quantized data in a particular section, including the most significant bit plane and the planes in between the most significant bit plane and least significant bit plane, with the least significant bit plane excluded. (de Queiroz, paragraph 0044). There is no disclosure in paragraph 0044 of de Queiroz of analyzing a bitstream, either in general or using a bitstream analyzing unit, to obtain at least one encoded bit-sliced data corresponding to a predetermined bit plane and side information encoded according to a transformed bit-sliced encoding method, as recited in independent claims 15 and 17.

Additionally, paragraph 0045 of de Queiroz discloses embedding bits into each block, rather than decoding bit-sliced data to obtain samples constituting the digital data. Similarly, paragraph 0049 of de Queiroz discloses embedding data in the bitstream, rather than decoding bit-sliced data to obtain samples constituting the digital data. Neither of these sections decoding in general, yet alone decoding using the steps recited in independent claim 15 or the structural elements recited in independent claim 17.

Accordingly, independent claims 15 and 17 are believed allowable over the prior art. Dependent claims 16 and 18 depend from independent claims 15 and 17, respectively, and add features which further remove the present invention from the prior art as recognized by the Examiner in the indication of allowable subject matter

in these claims. Given at least the distinctions identified above, the dependent claims are believed allowable over the prior art and a separate discussion of the dependent claims will not be belabored for the sake of brevity.

### § 103 Claim Rejections

Claim12 stands rejected under § 103(a) as obvious over <u>de Queiroz</u> as applied to claim 8, in view of U.S. Patent No. 6,778,965 to Bruekers et al. ("<u>Bruekers</u>"). Applicants respectfully traverse the claim rejections for at least the following reasons.

The deficiencies of <u>de Queiroz</u> as applied to independent claim 8 have been previously noted. <u>Bruekers</u> does not overcome these deficiencies. The Office Actions relies on <u>Bruekers</u> for allegedly teaching Huffman and arithmetic coding. Accordingly, claim 12 is believed allowable over the prior art.

## Conclusion

Applicants' invention, as recited in claims 1-6, 8-13 and 15-18, is a novel method and apparatus for encoding and/or decoding digital data which includes features neither disclosed nor suggested in the prior art. Neither <u>de Queiroz</u> nor <u>Bruekers</u>, taken alone or in combination, disclose or suggest Applicants' claimed invention. Accordingly, Applicants submit that claims 1-6, 8-13 and 15-18 are allowable over the prior art of record. Early notification to that effect is respectfully requested.

It is believed that this Response requires no fee. However, if a fee is required for any reason, the Commissioner is hereby authorized Deposit Account No. 02-4800 the necessary amount.

Respectfully submitted,

BUCHANAN INGERSOLL PC

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Charles F. Wieland III
Registration No. 33,096

P.O. Box 1404
Alexandria, Virginia  22313-1404
(703) 836-6620

VA 832308.1